

LISTING OF CLAIMS

1- 18. (Cancelled)

19. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester that has at least the elements recited in claim 18;

providing a volume of liquid in the digester, the liquid having a surface that varies in elevation; and

periodically pumping liquid downwards through the middle draft tube when the liquid surface rests below the upper end of the upper draft tube and above the upper end of the middle draft tube.

20. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester that has at least the elements recited in claim 18;

providing a volume of liquid in the digester, the liquid having a surface that varies in elevation over time; and

periodically pumping liquid upwards through the middle draft tube when the liquid surface rests below the upper end of the upper draft tube and above the upper end of the middle draft tube.

21. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester that has at least the elements recited in claim 18;

providing a volume of liquid in the digester, the liquid having a surface;

periodically pumping liquid through at least one of the draft tubes and simultaneously withdrawing some of the liquid and spraying it onto foam or froth on the liquid surface when the liquid surface rests below the upper end of the upper draft tube.

22. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester that has at least the elements recited in claim 1;

providing a volume of liquid in the digester; and

periodically pumping liquid upwards through the lower draft tube and downwards through the upper draft tube.

23. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester that has at least the elements recited in claim 1;

providing a volume of liquid in the digester; and

periodically pumping liquid in a single direction through both of the draft tubes.

24. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester that has at least the elements recited in claim 1;

providing a volume of liquid in the digester, the liquid having a surface;

periodically pumping liquid through at least one of the draft tubes and simultaneously withdrawing some of the liquid and spraying it onto foam or froth on the liquid surface.

25. (Withdrawn) A method for digesting sludge comprising the steps of:

providing a digester with an upper draft tube and a distinct lower draft tube, each draft tube having two ends that each open into the digester;

providing a volume of liquid in the digester, the liquid having a surface that varies in elevation over time; and

periodically pumping liquid through at least one of the draft tubes when the liquid surface rests below the upper end of the upper draft tube and above the upper end of the lower draft tube.

26. (Currently amended) A sludge digester comprising:

a vessel that has a shell with bottom section with sloped sides, a top section, and a middle section;

an upper draft tube that has a lower end that opens into the shell and an upper end that opens into the top section;

a distinct lower draft tube that has an upper end that opens into the shell, beneath the lower end of the upper draft tube, and a lower end that opens into the lower section; ~~and~~

~~means for pumping liquid through each of the draft tubes~~ the upper draft tube; and
separate, independent means for pumping liquid through the lower draft tube.

27. (New) A sludge digester as recited in claim 26, in which the vessel comprises more than two draft tubes.

28. (New) A sludge digester as recited in claim 26, in which jet pumps are provided as the means for pumping liquid through the draft tubes.
29. (New) A sludge digester as recited in claim 26, in which the middle section is bounded by cylindrical walls.
30. (New) A sludge digester as recited in claim 26, in which the top section slopes inwardly from the middle section.
31. (New) A sludge digester as recited in claim 26, in which the vessel is generally egg-shaped.
32. (New) A sludge digester as recited in claim 26, in which the means for pumping liquid through one of the draft tubes comprises means for pumping liquidly downwardly through that draft tube.
33. (New) A sludge digester as recited in claim 26, in which the means for pumping liquid through the draft tubes comprise means for pumping liquidly downwardly through the upper draft tube and upwardly through the lower draft tube.
34. (New) A sludge digester as recited in claim 26, in which the means for pumping liquid through the draft tubes comprise means for simultaneously pumping liquid downwards through at least one of the draft tubes and upwards through another of the draft tubes.

35. (New) An anaerobic sludge digester comprising:

a vessel for containing a volume of liquid, the vessel having a shell with a bottom section with sloped sides, a top section, and a relatively wide middle section;

an upper draft tube that has upper end in the shell, a lower end in the relatively wide middle section, and an inlet and an outlet at those ends;

a lower draft tube that has an upper end in the relatively wide middle section, beneath the lower end of the upper draft tube, a lower end in the shell, and an inlet and an outlet at those ends; and

means for pumping liquid through one of the draft tubes and separate, independently operable means for pumping liquid through the other of the draft tubes.

36. (New) An anaerobic sludge digester comprising:

a vessel for a volume of liquid, the vessel having a shell with a top section, a relatively wide middle section, and a bottom section with sloped sides;

an upper draft tube with a lower end in the relatively wide middle section;

a lower draft tube with a upper end in the relatively wide middle section; and

means for pumping liquid downwards through the upper draft tube to the relatively wide middle section.

37. (New) An anaerobic sludge digester as recited in claim 36, in which:

an upper end of the lower draft tube is directly below the lower end of the upper draft tube, and the digester comprises means for pumping liquid upwardly through the lower draft tube as liquid is being pumped downwardly through the upper draft tube.

38. (New) An anaerobic sludge digester as recited in claim 35, and further comprising an external liquid recirculation system.

39. (New) An anaerobic sludge digester comprising:

a vessel for containing a volume of liquid, the vessel having a shell with a top section, a middle section, and a bottom section with sloped sides;

an upper draft tube with an upper end in the top section;

a lower draft tube with a lower end in the bottom section;

a middle draft tube with an upper end directly beneath the upper end of the upper draft tube; and

means for pumping liquid in one of the drafts tubes in one direction, and for simultaneously pumping liquid in another of the draft tubes in an opposed direction.